



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,026	05/15/2001	Evangelos Tirfon Laskaris	839-1008	7982

7590 12/18/2002

NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Rd.
Arlington, VA 22201-4714

EXAMINER

PEREZ, GUILLERMO

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/855,026

Applicant(s)

LASKARIS ET AL.

Examiner

Guillermo Perez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 21 is objected to because of the following informalities: line five states "said tension having", the limitation should read ---said tension rod having---.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 10, 13-14, 16-18, 20-21, and 23-24 are rejected under 35

U.S.C. 102(b) as being anticipated by Rios (U. S. Pat. 4,277,705).

Referring to claim 1, Rios discloses a synchronous machine, a rotor (6)

comprising:

a rotor core (28);

a super-conducting coil winding (16) extending around at least a portion of the rotor core (28), the coil winding (16) having a pair of side sections on opposite sides of the rotor core (28);

at least one tension rod (32) extending between the pair of side sections of the coil winding (16) and through the rotor (6), wherein each end of the tension rod is adjacent ("*not distant*" *Merriam-Webster's Collegiate Dictionary Tenth Edition*) one of the side sections;

a coil housing (26,28) at each of opposite ends of the tension rod (32), wherein the housing (26,28) wraps around the coil winding (16) and is attached to the tension rod (32).

Referring to claim 2, Rios discloses that the coil housing (26,28) is a U-shaped channel.

Referring to claim 3, Rios discloses that the rotor core (28) is in an internal vacuum.

Referring to claim 4, Rios discloses a cryogenic coupling providing cooling fluid to the coil winding (16), wherein the housing (26,28) and tension rod (32) are cooled by conduction from the coil winding (16).

Referring to claim 10, Rios discloses that the housing (26,28) is formed of a metal material selected from a group consisting of aluminum, Inconel, and titanium alloys.

Referring to claim 13, Rios discloses that the tension rod (32) extends through a longitudinal axis of the rotor (6).

Referring to claim 14, Rios discloses that the tension rod (32) extends through conduits in the rotor core (28).

Referring to claim 16, Rios discloses a method for supporting a super-conducting coil winding (16) on a rotor core (28) of a synchronous machine comprising the steps of:

- extending a tension bar (32) through a conduit in the rotor core (28), such that the ends of the tension bar are each adjacent the coil windings;
- inserting a housing (26,28) over a portion of the coil (16);

- attaching an end of the tension bar (32) to the housing (26,28).

Referring to claim 17, Rios discloses inserting a second housing (26,28) over a second portion of the coil (16) and attaching the second housing (26,28) to a second end of the tension bar (32).

Referring to claim 18, Rios discloses that the tension bar (32) extends through a rotational axis of the rotor core (28), and the first portion and second portion of the coil (16) are on opposite sides of the rotor (6).

Referring to claim 20, Rios discloses cryogenically cooling the coil (16), and cooling the housing (26,28) and tension rod (32) by heat transfer between the coil (16) and the housing (26,28) and tension rod (32).

Referring to claim 21, Rios discloses a rotor for a synchronous machine comprising:

- a rotor core having a conduit orthogonal to a longitudinal axis of the rotor;
- a racetrack super-conducting (SC) coil winding in a planar racetrack shape parallel to the longitudinal axis of the rotor;
- a tension rod inside the conduit of the core, the tension rod having ends adjacent to the coil windings; and
- a housing coupling the coil winding to the tension rod.

Referring to claim 23, Rios discloses a plurality of conduits orthogonal to the longitudinal axis of the rotor core and in a plane defined by the SC coil.

Referring to claim 24, Rios discloses that the tension rod (32) has a flat end abutting the coil (16 through the housing 28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5-9, 11-12, 15, 19, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rios in view of Laskaris (U. S. Pat. 3,991,333).

Rios substantially teaches the claimed invention except that it does not show a dowel coupling the housing to the tension rod. Rios does not disclose a hollow pin coupling the housing to the tension rod. Rios does not disclose that the pin extends through an aperture in an end of the tension rod and through apertures in side flanges on the coil housing. Rios does not disclose that the pin extends through an aperture in an end of the tension rod and through the coil housing. Rios does not disclose a hollow pin formed of a high strength material selected from a group of metals consisting of Inconel and titanium alloys.

Laskaris discloses a dowel (30) coupling the housing (20, 36) to the tension rod (38). Laskaris discloses a hollow pin (30) coupling the housing (20,36) to the tension rod (38). Laskaris discloses that the pin (30) extends through an aperture in an end of the tension rod (38) and through apertures in side flanges on the coil housing (20,36). Laskaris discloses that the pin (30) extends through an aperture in an end of the tension rod (38) and through the coil housing (20,36). Laskaris invention has the purpose of providing a rigid support to the windings.

It would have been obvious at the time the invention was made to modify the machine of Rios and provide it with the fastening configuration disclosed by Laskaris for the purpose of providing a rigid support to the windings.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the fastening means with claimed materials since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

3. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rios in view of Nottingham (U. S. Pat. 4,072,873).

Rios substantially teaches the claimed invention except that it does not show clamps at opposite ends of the coil.

Nottingham discloses clamps (25,26) at opposite ends of the coil (18). Nottingham's invention has the purpose of securing the end turns in a highly conductive and mechanically strong union.

It would have been obvious at the time the invention was made to modify the machine of Rios and provide it with the clamps disclosed by Nottingham for the purpose of securing the end turns in a highly conductive and mechanically strong union.

Response to Arguments

Applicant's arguments filed October 9,2002 have been fully considered but they are not persuasive.

In response to Applicant's remark that Rios does not disclose that the tension rods do not extend between opposite sides of the coils, it must be noted that Rios show those limitation in figure 7, specifically reference number 26 and 28.

In response to Applicant's remark that Rios does not disclose that the rods have ends adjacent the ends of the winding ends, it must be noted that the ends of the bolts 32 in figure 1 are adjacent ("*not distant*" *Merriam-Webster's Collegiate Dictionary Tenth Edition*) to the ends of the winding ends.

It must also be noted that the housing 26,28 is wrapped around the windings of Rios in figure 7.

In response to Applicant's remark that Rios does not disclose the U-shaped channel, it must be noted that 26 and 28 in figure 7 of Rios describe a U-shaped channel. The dowel 30 is shown in figure 1 of Laskaris.

In response to Applicant's argument that Rios and Laskaris teaches away from orienting the tension rod so that its ends are adjacent to the coil sides, non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., only the coils and the support rods are at cryogenic temperatures) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Nottingham teaches that the end turns are subjected to vibrations and an extra support, other than the rotor, is needed to secure the end turns in a highly conductive and mechanically strong union. The same problem is faced by the rotor in Rios, where centrifugal vibrations would produce a mechanical failure unless an extra support is provided to the windings.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2834

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
December 16, 2002



TRAN NGUYEN
PRIMARY EXAMINER